

Remarks:

This amendment is submitted in an earnest effort to advance this case to issue without delay.

There are basically two standard methods known from the art and used widely to fill a bag with loose material.

In the so-called net/volumetric technique a predetermined volume of the substance is fed as a batch into the bag. In such a method the predetermined volume is set such that the bag can contain it. Such a method is very fast. It has, however, the problem that in order to ensure that a bag is never overfilled, the predetermined volume is set low or the bag is made extra big so that if, for instance, the volume fed bulks up the bag will not be overfilled, making a mess requiring shutdown of the filling machine. Another disadvantage is that if volume is used as the measure, one can end up with a series of bags having weights that range considerably both ways from an ideal weight, depending on whether the material in the bag is extra dense or extra light.

The other main method is the gross-weight technique. Here the weight of the bag being filled is constantly monitored and, once the desired weight is attained, filling is stopped. For accuracy's sake the filling at least at the end stages of filling must be carried out very slowly so that the desired weight is not

overshot. This technique has the advantage of producing filled bags of exact weight, but it invariably is slow and also, because of the style of careful pouring required by the weight-monitoring equipment, is very dusty.

The instant invention is based on the discovery that, switching from the net/volumetric technique to the gross-weight technique, one is able to avoid the main disadvantages of both techniques while retaining the advantages of both. Thus during a first phase a bag is quickly filled using the net/volumetric method to, say, 85% full. Then the filling system switches over to the slower gross-weight system and, while continuing to fill the bag, monitors the weight and stops the filling operation altogether when the desired weight is reached. In this hypothetical example, therefore, only 15% of the bag is filled using the slower gross-weight technique, so that production speed is minimally affected. Most of the filling is done by the faster but less accurate net/volumetric technique. This changeover between these two techniques was clearly laid out in the original disclosure and original claim 49.

Both of the main claims have been amended to specifically refer to these two techniques defined above.

Thus contrary to the statement that the invention is merely a system for changing filling speeds as a bag is filled, this is not correct. Different filling speeds are not recited in two of the three independent claims; instead these claims recite

sequential use of two different if known techniques, where what is changed is not primarily filling speed, but the factor being monitored to control filling, that is first volume, then weight. Admittedly it is known to slow filling in the gross-weight system as the desired weight is achieved, and this could even be done with the instant invention. The difference is that here there is a first filling step that simply involves quickly dumping a premeasured or metered volume of the material into the bag without regard to the bag's weight. Then the system switches over to a combined monitoring/filling operation where the actual weight control the filling speed, if only by reducing the filling speed to zero when a desired weight is reached. During the first phase weight is ignored; during the second phase volume is ignored.

Nothing in the art suggests filling using a hybrid method as now lucidly defined in the claims.

Thus US 3,531,908 of Rausing recites a standard net/volumetric filling method. Here a predetermined quantity of material is poured into the bottle 1.

On the other hand, US 4,976,091 of Salemka discloses a two-speed net/volumetric filling system in that it fills the tube with a first relatively large volume of material at a high speed and then pours in a second relatively small volume of material at a lower speed. In both cases the volume, as determined by simple ultrasonic level detectors, is the controlling factor. In the instant invention the first fast phase is identical to the first filling phase of Salemka, but then the instant invention switches


to a feedback system for the second phase, simultaneously filling and monitoring weight. In Salemka in the second phase the same net/volumetric system as the first phase is used, but with a slower fill rate.

Nothing in these references suggests a first phase with net/volumetric filling and a second stage with gross-weight filling. The instant invention as defined in the claims is therefore allowable over these patents under §103.

Allowance of all claims and passage to issue are in order.

If only minor problems that could be corrected by means of a telephone conference stand in the way of allowance of this case, the examiner is invited to call the undersigned to make the necessary corrections.

Respectfully submitted,  
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Enclosure: Request for extension (one month)